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Crop Rotations for the Coastal Plain Section of North Carolina

NORTH CAROLINA
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THE WORLD COTTON SITUATION

The cotton supply of the world this year will be close to 40,000,000 bales This is probably the largest supply of cotton in history. In 1925 the world supply was 34,000,000 bales

The production of American Cotton for 1926-27 will be approximately 18,600,000 bales. This production, together with the estimated carry-over of 5,730,000 bales, gives a total supply of American cotton of 24,330,000 bales compared with 19,671,000 in 1925-26, or an increase of 24 per cent of American cotton.

The above information means that the world carry-over of American cotton in 1927-28 will be close to 9,000,000 bales. This large carry-over with the crop in 1927 equal to the average of the past three years, would mean a supply of American cotton of approximately 24,000,000 bales. Should this happen the price to the cotton grower will likely be lower in 1927 than it was in 1926. To get prices equal to the average of the past three years the cotton production for 1927 should not exceed 10,000,000 bales, or on an average basis with yields equal to the average for the past three years means not more than 32,000,000 acres in cotton. Last year the American farmer planted over 47,000,000 acres of cotton. Therefore to maintain an average price equal to the past three years, the cotton acreage for 1927 should be reduced 30 per cent.

CROP ROTATIONS FOR THE COASTAL PLAIN SECTION OF NORTH CAROLINA

By E. C. Blair, Extension Agronomist

A crop rotation is a system of farming in which the crops follow each other in regular order, as opposed to the usual practice of planting crops without a definite system. There is an abundance of experimental proof that, such conditions as soil, season, fertilization, and cultivation being equal, better yields can be obtained in a good crop rotation than with a poor crop rotation, or with the continuous growing of a single crop.

ADVANTAGES OF A CROP ROTATION

(1) Some of the advantages of a good crop rotation are: (1) More crops are turned under for green manure. This means the soil will contain more organic matter. The organic matter will make more moisture available to crops in dry years, will help get rid of excess moisture in wet years, will check erosion of hilly and sloping lands, and will make all lands easier to till.

(2) If the green manure crop be a legume, it will feed on nitrogen from the air, and this nitrogen will be available to the following crops. Less commercial nitrogen will have to be bought, so that the fertilizer bill can be considerably reduced.

(3) Plant food in the soil can be handled to better advantage. A good supply of organic matter in the soil makes commercial fertilizers more effective upon growing crops than they would be otherwise. Since all crops do not draw on the different sorts of plant food in the same proportion, a crop that is a heavy feeder on one kind can, and should be, followed by one that feeds lightly on that kind of plant food. By alternating deep rooted and shallow rooted plants, plant food may be taken from different depths in the soil. Much plant food that is out of reach of a shallow rooted crop like oats, is available to crimson clover, which roots deeply.

(4) Where lime is used it can be applied at the point in the rotation where it will do the greatest good to the crop that needs it most. Then the residual effect of the lime will be sufficient for the other crops. This also holds true for stable manure.

(5) Weeds are kept under better control. Some weeds are worse in cultivated crops, others in broadcasted or sod crops. By alternating these classes of crops all weeds are more easily managed.

(6) Many plant diseases and harmful insects will be controlled. While this does not apply to all pests, the practice of crop rotation is well worth while from the standpoint of disease and insect control alone.

(7) It is much easier to practice diversification of crops with a rotation than without one.

(8) The small fields and patches seen on many farms can be consolidated into large fields. This will make all field work easier.

(9) With a variety of crops, labor is more evenly distributed through the year. Some fields are plowed in spring, others in the fall or winter. Different crops are planted and harvested at different times. All this will enable one man to handle more acres than where most of the farm is planted to a single crop.

(10) The land is kept at work nearly all the time, instead of being allowed to loaf half the year. Loafing land represents a big investment that is bringing no returns.

(11) The general management of the farm is easier. The farmer knows well in advance what crop he is going to plant, and where. He also knows his seed and fertilizer requirements ahead of time. He can made his plans accordingly, and usually gets his crops planted on time.

(12) Soil fertility can be kept up under a tenant system of farming. Most tenants will naturally neglect soil improvement if left alone. But if they are required to follow the right sort of rotation the soil will be built up.

REQUIREMENTS THAT A GOOD CROP ROTATION MUST MEET

(1) A good rotation must take care of and improve the soil. The rotation that fails to do this is not a good one.

(2) It must produce enough corn and roughage for the livestock on the farm and such other food and feedstuffs as can be grown economically.

(3) The acreage left after satisfying the two above requirements is to be planted to one or more money crops.

(4) The rotation must be so planned that there is some return from each acre every year, in addition to the green manure crops.

(5) Only crops that are adapted to the soil and climate should be included in the rotation.

(6) The order of crops must be so arranged that there will be plenty of time to plant each crop after harvesting the preceding crop.

(7) The acreage and proportion of different crops must be so adjusted that the labor available can handle them.

HOW TO PLAN A ROTATION

When a rotation is once established on a farm, it is easier to follow it than not to. The chief difficulty is in getting started. The best way to start is to make a rough map of the farm, showing each field, it's acreage, and what crop is growing on it. This map will usually reveal the fact that there are too many small fields, too few acres in leguminous crops, and too many in such crops as cotton, corn, tobacco, or peanuts. A study of the map will show that the fields can be combined to form three, four or more larger fields, all about the same size. On some farms it will be necessary to let two small fields serve as one of the main fields, even though they do not join. Then select the rotation to be used. This rotation should be of the same general type of farming as is already being practiced. The number of years in the rotation must be the same as the number of fields. On some farms the rotation may have to be modified to fit the number of fields, on others the number of fields can be adjusted to the rotation.

Sometimes it is advisable to have two independent rotations on the same farm. This is often the case on tobacco farms. The land not growing tobacco can then be built up to a high state of fertility, while high quality tobacco is being produced on other fields, in a rotation designed to keep the soil from becoming too rich. On still other farms there are two types of soil so widely different (such as poorly drained, dark colored lowlands, and well drained sandy uplands) that a separate rotation is needed for each type of soil.

The next step is to shift from the present layout of crops to the new rotation. This may take two or three years. Make a schedule for each part of every field, from the present time until the rotation is firmly established. This may seem hard to do, but a little thought will bring about the desired results. Having established the rotation, stick to it. Do not break it up just to take a chance on some crop that was high in price the previous year. Most of the rotations recommended in this circular allow enough leeway in this respect. If a crop fails, plant some substitute crop, and get the field back to its regular schedule as soon as possible. For instance, soybeans or cowpeas may be used as a substitute when the stand of corn or cotton is not worth leaving.

SAVING LEGUME AND COVER CROP SEED AT HOME

The expense of soil improvement crops can be greatly reduced by arranging to save seed for crimson clover, vetch, lespedeza, rye, oats, soybeans, cowpeas, and possibly velvet beans at home. An acre or two of these crops, if allowed to mature, will make more than enough seed for the average farm. Cutting and threshing is a good method for crimson clover, vetch, rye, oats, and soybeans; hand picking for cowpeas, and velvet beans; a seed pan for lespedeza; and the soybean harvester for soybeans.

Below are given some rotations suitable for the Coastal Plain section. Most of these rotations are in actual use in North Carolina. It should be remembered that these rotations can be modified, or other rotations planned, to suit special needs.

ROTATIONS FOR THE COASTAL PLAIN

Rotations Nos. 1 to 7 Are Especially Suited to the Upper Part of the Coastal Plain

No. 1.	First year	Corn (for grain) with soybeans (for seed or grazing) or velvet beans (for grazing). All vines to be turned under.
	Second year	Spring oats, (for hay) with lespedeza (for hay or grazing) or soybeans (for hay, seed or grazing).
	Third year	Cotton. Abruzzi rye, and vetch or crimson clover in fall (to be turned under for corn).
No. 2.	First year	Corn (for grain) with soybeans (for seed) or velvet beans (for grazing). All vines to be turned under.

	Second year	Cotton. Abruzzi rye, and vetch or crimson clover in fall (for grazing and turning under).
	Third year	Soybeans (for seed or hay) or peanuts (for nuts or hay). Abruzzi rye and vetch in fall (to be turned under for corn).
No. 3.	First year	Corn (for grain) with soybeans (for seed or grazing) or velvet beans (for grazing). All vines to be turned under. Abruzzi rye in fall (for grazing and turning under).
	Second year	Soybeans (for seed or hay) or peanuts (for nuts or hay).
	Third year	Cotton. Abruzzi rye, and vetch or crimson clover in fall (for turning under).
No. 4.	First year	Corn (for grain) with soybeans (for seed or grazing) or velvet beans (for grazing). All vines to be turned under.
	Second year	Cotton. Abruzzi rye, and vetch or crimson clover in fall (for grazing and turning under).
	Third year	Soybeans (for seed). Vines to be turned under. Oats and vetch in fall.
	Fourth year	Oats and vetch (for hay). Lespedeza (for grazing and turning under) or soybeans (for hay).
	Fifth year	(May be omitted, leaving a four-year rotation). Cotton. Abruzzi rye, and vetch or crimson clover in fall (for turning under).
No. 5.		This rotation has proven especially satisfactory on a large cotton farm worked entirely by tenants.
	First year	Corn (for grain) with soybeans planted thick (for seed and turning under).
	Second year	Cotton.
	Third year	Cotton.
No. 6.		To be used in connection with rotations Nos. 1, 2, 3, 4, 5, 8, 9, 10, or 11.
	First year	Tobacco. Crimson clover in fall (for turning under).
	Second year	Corn. Abruzzi rye in fall (for turning under).

No. 7.	First year	Tobacco. Abruzzi rye, and vetch or crimson clover in fall (for turning under).
	Second year	Corn (for grain) with velvet beans (for grazing and turning under).
	Third year	Cotton. Abruzzi rye in fall (for turning under).

Rotations Nos. 8 to 12 Are Especially Suitable for the Lower Part of the Coastal Plain

No. 8.	First year	Corn (for grain) with velvet beans (for grazing). Abruzzi rye broadcast over the land in fall (for grazing and turning under).
	Second year	Corn (for grain) with soybeans (for seed and grazing with vines turned under). Oats and vetch in fall.
	Third year	Oats and vetch (for hay) soybeans (for seed or hay). Peanuts (for hay or grazing) or sweet potatoes. Abruzzi rye and vetch or crimson clover in fall (for turning under).

NOTE. Rotations 6 or 12 may be used in connection with No. 8 on the lighter land of the farm.

No. 9.	First year	Corn (for grain).
	Second year	Irish potatoes. Corn (for grain) or soybeans (for hay).
	Third year	Soybeans (for seed, vines turned under).
No. 10.	First year	Corn (for grain).
	Second year	Soybeans (for seed, vines turned under). Oats and vetch in fall.
	Third year	Oats and vetch (for hay). Lespedeza (for grazing and turning under).
No. 11.	First year	Corn (for grain) with velvet beans (for grazing or turning under).
	Second year	Irish potatoes, sweet potatoes, truck crops or cotton. Abruzzi rye and vetch in fall (for grazing and turning under).
	Third year	Soybeans (for hay or seed). Abruzzi rye and vetch in fall (for grazing and turning under).
No. 12.		To be used in connection with Nos. 8, 9, 10, and 11, on the lighter land of the farm.
	First year	Tobacco. Cowpeas after removal of tobacco crop (for turning under).
	Second year	Cotton. Abruzzi rye in fall (for turning under).

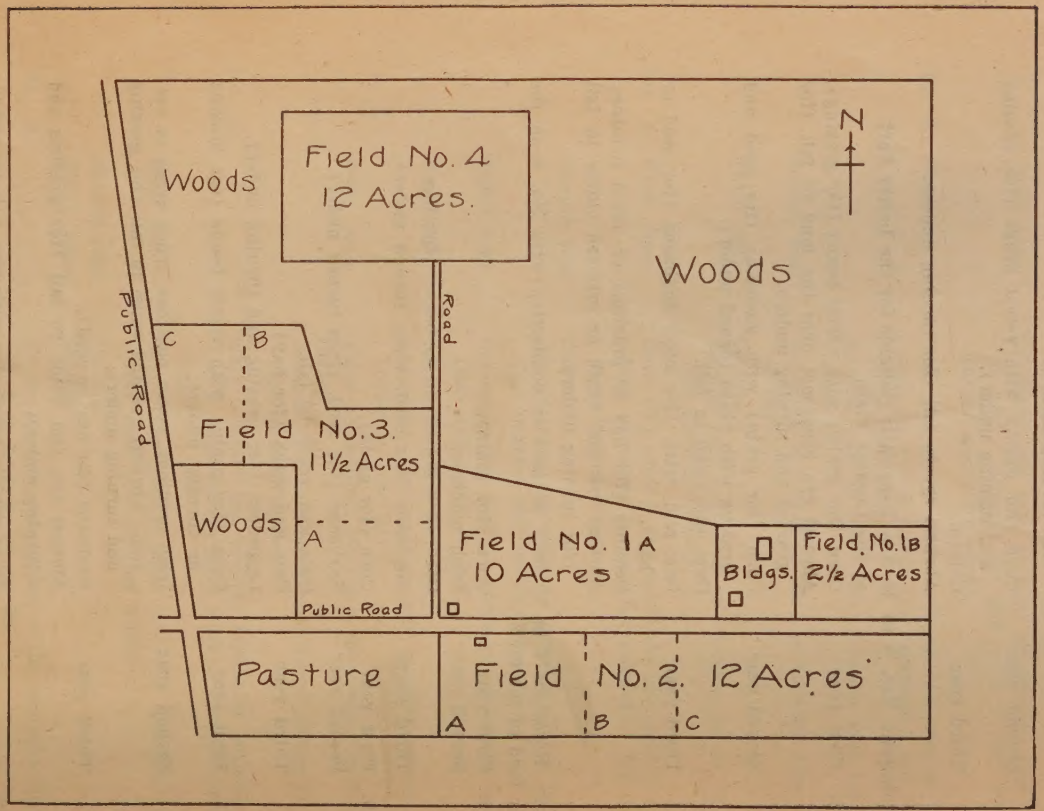

FIGURE 1. A farm on which very little rearr angement of fields was necessary in order to follow a crop rotation. The dotted lines show how the fields were formerly divided.

Field No. 1 is necessarily in two sections.

Farm of J. P. Davis, Pikeville, Wayne County, North C arolina.

TABLE NO. I. SCHEDULE OF CROPS FOR J. P. DAVIS' FARM, PIKEVILLE, WAYNE COUNTY, NORTH CAROLINA

Year	Field No. 1, 12½ acres	Field No. 2, 12 acres	Field No. 3, 11½ acres	Field No. 4, 12 acres
1925	A. and B. Cotton	A. Tobacco B. Corn C. Cotton	A. Tobacco B. Cotton C. Cotton	Corn and soybeans
1926	Cotton Rye	Corn and soybeans	A. and C. Corn and soybeans B. Tobacco	Cotton Rye
1927	Tobacco Rye and vetch	Cotton Rye	Corn and soybeans	Cotton Rye
1928	Corn and soybeans	Cotton Rye	Cotton Rye	Tobacco Rye and vetch
1929	Cotton Rye	Tobacco Rye and vetch	Cotton Rye	Corn and soybeans
1930	Cotton Rye	Corn and soybeans	Tobacco Rye and vetch	Cotton Rye

In this rotation soybeans are planted with corn for seed, the vines being turned under for soil improvement. Rye after cotton, and rye and vetch after tobacco are to be grazed, then allowed to make another growth for turning under. Crimson clover may be used after tobacco instead of rye and vetch.

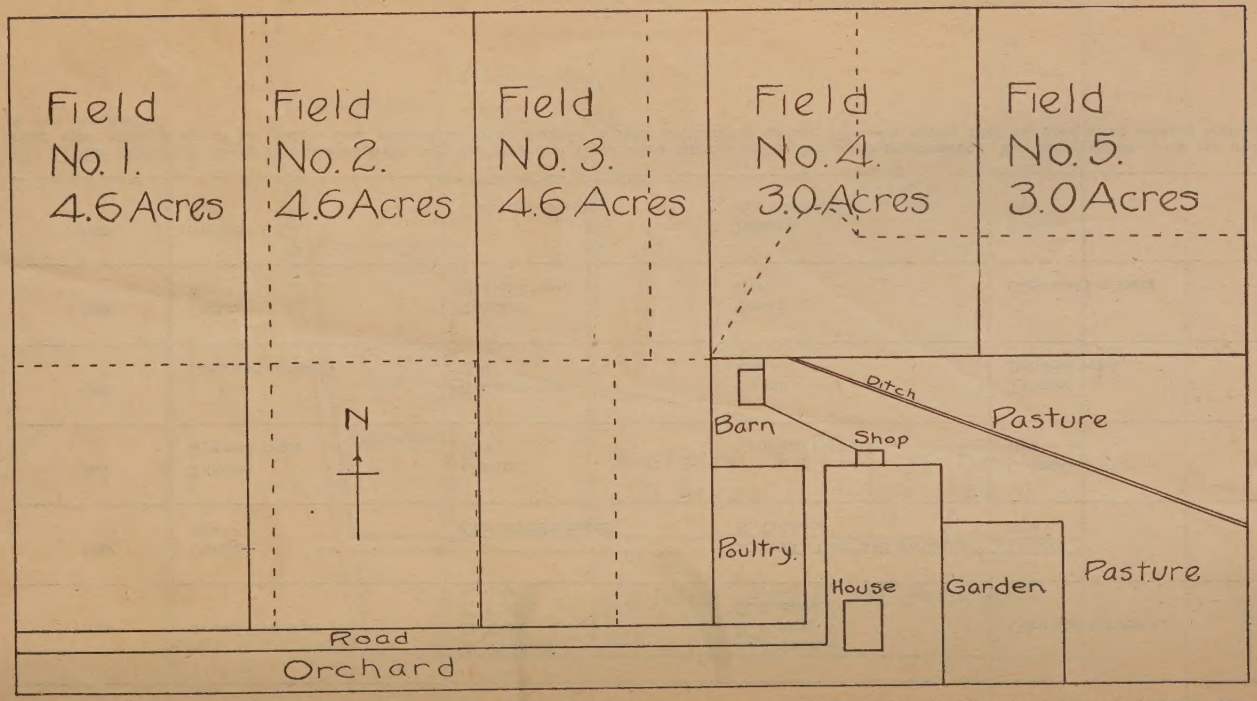

Figure 2. Map of a farm showing how the fields have been rearranged with a view of following a crop rotation. The dotted lines show the former arrangement of fields. On this farm two rotations are used, a three year rotation on fields 1, 2 and 3, and a two-year tobacco rotation on fields 4 and 5.

Farm of John Holland, Kenly, Johnston County, North Carolina.

TABLE NO. II. SCHEDULE OF CROPS FOR JOHN HOLLAND'S FARM, KENLY, JOHNSTON COUNTY, NORTH CAROLINA. (*See Figure* II.)

Year	Field No. 1. 4.6 acres	Field No. 2. 4.6 acres	Field No. 3. 4.6 acres	Field No. 4. 3.0 acres	Field No. 5. 3.0 acres
1926	Cotton Crimson clover	Crimson clover or small grain Soybeans or peanuts Crimson clover in fall	Corn Crimson clover or small grain	Corn Abruzzi rye	Tobacco Crimson clover
1927	Corn Crimson clover or small grain	Cotton Crimson clover	Crimson clover or small grain Soybeans or peanuts Crimson clover in fall	Tobacco Crimson clover	Corn Abruzzi rye
1928	Crimson clover or small grain Soybeans or peanuts Crimson clover in fall	Corn Crimson clover or small grain	Cotton Crimson clover	Corn Abruzzi rye	Tobacco Crimson clover
1929	Cotton Crimson clover	Crimson clover or small grain Soybeans or peanuts Crimson clover in fall	Corn Crimson clover or small grain	Tobacco Crimson clover	Corn Abruzzi rye

In the three year rotation (fields 1, 2, and 3) half of the cornfield is planted to crimson clover for seed, and the other half to small grain (usually wheat) for grain. The small grain is followed by soybeans for hay, and the crimson clover by peanuts, which are used for both nuts and hay. The field is then sown to crimson clover again, which is turned under for cotton. Crimson clover is sown in the cotton after the first picking and turned under for corn.

In the two year rotation (fields 4 and 5) crimson clover is turned under for cotton and Abruzzi rye for tobacco. The corn exhausts most of the nitrogen supplied by the crimson clover, before the tobacco is planted on the field.

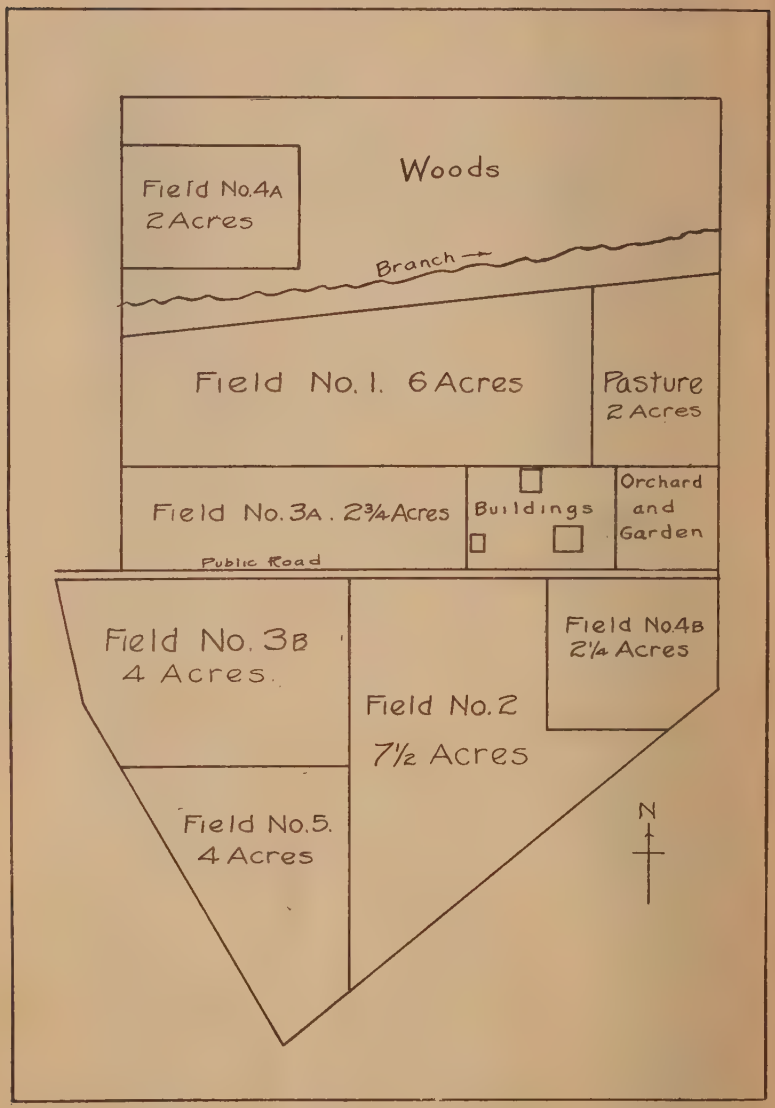

FIGURE 3. A farm in the lower Coastal Plain, with two rotations. The highest land on the farm, fields Nos. 4 and 5, is used for cotton and tobacco, while other crops are grown on the low-lying fields, Nos. 1, 2 and 3.
Farm of C. M. Foy, Trenton, Jones County, North Carolina.

TABLE NO. III. SCHEDULE OF CROPS FOR C. M. FOY'S FARM, TRENTON, JONES COUNTY, NORTH CAROLINA. (*See Figure* III.)

Year	Field No. 1, 6 acres	Field No. 2, 7½ acres	Field No. 3, 6 acres	Field No. 4, 4¼ acres	Field No. 5, 4 acres
1924	Soybeans Cowpeas and peanuts	Corn and soybeans	A. Corn B. Corn and soybeans	A. Tobacco B. Tobacco	Corn and soybeans
1925	Corn and velvet beans	Soybeans or peanuts Rye	Corn and soybeans	Tobacco Crimson clover	Cotton Rye
1926	Corn and soybeans Oats and vetch	Corn and velvet beans	Soybeans or peanuts Rye, etc.	Cotton Rye	Tobacco Crimson clover
1927	Soybeans or peanuts Rye, etc.	Corn and soybeans Oats and vetch	Corn and velvet beans	Tobacco Crimson clover	Cotton Rye
1928	Corn and velvet beans	Soybeans or peanuts Rye, etc.	Corn and soybeans Oats and vetch	Cotton Rye	Tobacco Crimson clover
1929	Corn and soybeans Oats and vetch	Corn and velvet beans	Soybeans or peanuts Rye, etc.	Tobacco Crimson clover	Cotton Rye

In this rotation the velvet bean vines are to be grazed by cattle after harvesting corn. Seed are to be gathered from the soybeans planted with corn, after which hogs should be allowed to eat the shattered beans. The corn may be left for the hogs or harvested, as desired. All residues of velvet bean and soybean vines are to be turned under for soil improvement.

Soybeans and peanuts planted alone are to be used for hay and seed. Oats and vetch should be cut for hay. All rye and crimson clover crops are to be turned under for soil improvement.